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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/686,508 | 10/14/2003 | Gregory A. Hubbard | GP-304193 | 3535 |

7590 04/21/2005

Leslie Hodges
General Motors Corporation, Legal Staff
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Detroit, MI 48265-3000

EXAMINER

LOUIS JACQUES, JACQUES H

| | |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

3661

DATE MAILED: 04/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/686,508

Applicant(s)

HUBBARD ET AL.

Examiner

Jacques H Louis-Jacques

Art Unit

3661

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 6-9 is/are allowed.
- 6) ☐ Claim(s) 1-4 and 10-13 is/are rejected.
- 7) ☒ Claim(s) 5, 14 and 15 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>10142003</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

1. The references cited in the Information Disclosure Statement (IDS) filed on October 14, 2003 have been considered. An initialed copy of PTO form 1449 is attached herewith.

Specification

2. The disclosure is objected to because of the following informalities: Paragraph [0001] on page 1 of the specification is incomplete. Applicant is suggested to provide the missing serial number and the status of the application.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-4 and 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Loeffler et al [6,154,701] in view of Yamaguchi et al [US 2002/0062183].

Loeffler et al '701 discloses a method and device for controlling the drive train of motor vehicle. The drive train, according to Loeffler et al, includes an engine (101) and a transmission (106). According to Loeffler et al, as set forth in columns 2 and 3, a set of operating region for the transmission (i.e., an output operating region and an input

operating) is defined or pre-given. Furthermore, according to Loeffler et al, there is provided, for points of operation within the output operating region of interest, determining preferred operating points within the input operating region. Loeffler et al further disclose defining an operating space for the powertrain in transmission input speed, transmission input torque, transmission output speed and transmission output torque. See column 4. However, while Loeffler et al discloses determining the preferred operating points while considering several criteria (e.g., total efficiency of the drive train of the vehicle), Loeffler et al does not particularly teach that the preferred operating points within the input region are determined as a function of preselected losses within the powertrain. Yamaguchi et al, on the other hand, discloses a control system for hybrid vehicle having a hybrid powertrain including an electric motor (103) and a battery (112). The vehicle powertrain system also includes an engine (101) and a transmission (104). See, for example, figure 28. Yamaguchi et al discloses determining operating points as a function of preselected losses within the powertrain. See pages 6, 12, 13 and 14. Yamaguchi et al also discloses determining at least one operating region for a region within the operating space corresponding to system operation as zero battery power. See figures 3-4 and 12-13. See also figures 34-38, page 12. The preselected losses, according to Yamaguchi et al, are selected from the group consisting of engine losses, transmission losses, motor losses and battery losses and combinations thereof. See pages 13 and 14. Thus, it would have been obvious to one skilled in the art at the time of the invention to be motivated to modify the drivetrain control of Loeffler et al by incorporating the features from the control system for hybrid vehicle of Yamaguchi et al because such

modification, as suggested by Yamaguchi et al (page 1) would improve the efficiency of the system.

Allowable Subject Matter

5. Claims 5, 14 and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. Claims 6-9 are allowed.

The prior art do not particularly teach, in combination with the other features, determining a first set of preferred operating points corresponding to unconstrained battery usage and second set of preferred operating points corresponding to fully constrained used. The prior art also fails to teach mapping valid combinations of input operating points within the input operating region and output operating points within the operating region to a measure of powertrain system losses as the valid combinations and, for operating points within the operating region, selecting input operating points within the input operating region from mapped valid combinations corresponding to predetermined criteria.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Art Unit: 3661

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|-----------|----------------|-----------|
| 6,751,960 | Arimitsu et al | Jun. 2004 |
| 6,814,688 | Foelsche et al | Nov. 2004 |
| 6,842,686 | Homeyer et al | Jan. 2005 |
| 6,847,877 | Homeyer | Jun. 2005 |

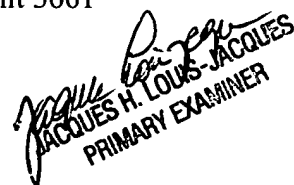
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jacques H Louis-Jacques whose telephone number is 571-272-6962. The examiner can normally be reached on M-Th 5:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Black can be reached on 571-272-6956. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jacques H Louis-Jacques
Primary Examiner
Art Unit 3661

/jlj



JACQUES H. LOUIS-JACQUES
PRIMARY EXAMINER